

POWER ARTICULATING-TOP DRIVE
(NOTE RED ARTICULATING CYLINDERS)
AND POWER SWING SLIDES

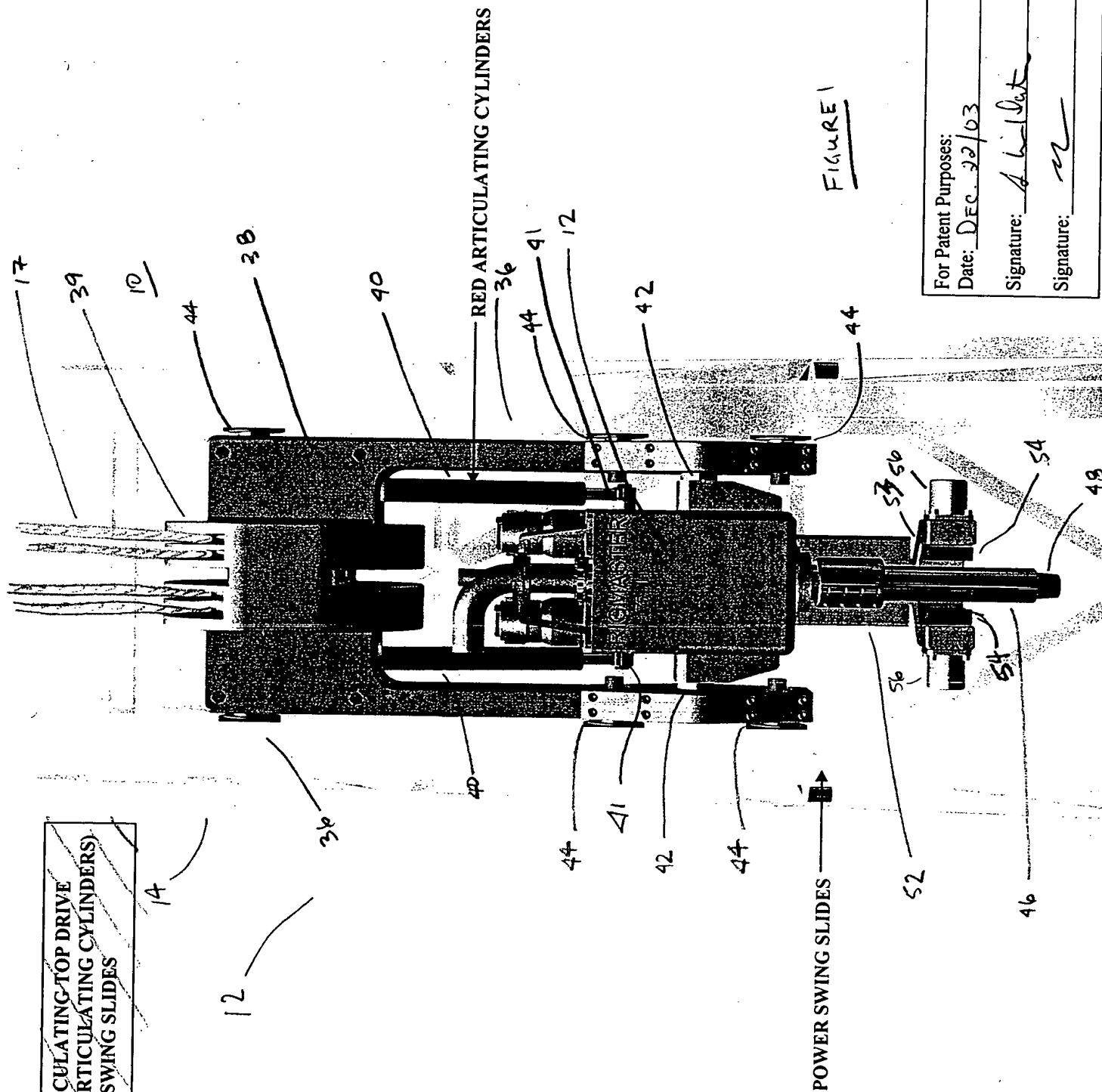


FIGURE 1

For Patent Purposes:

Date: DEC 22/03

Signature: *A. L. L. L.*

Signature: *W*

DRILL PIPE ROLLING FROM THE PIPE TUB TO
THE "PIPE LAUNCHER"

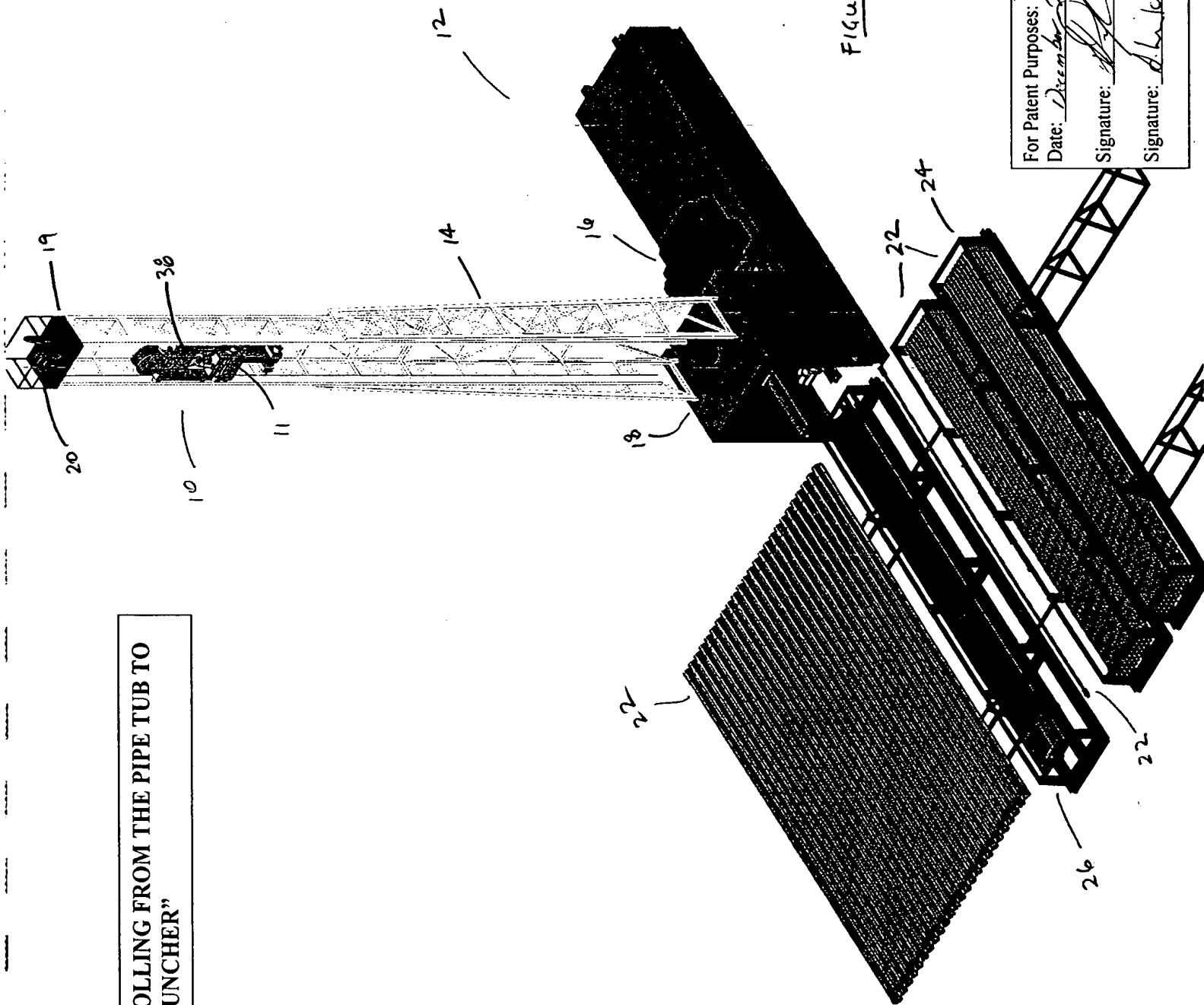


FIGURE 2

For Patent Purposes:
Date: December 2002
Signature: [Signature]
Signature: [Signature]

PIPE IN LAUNCHER READY FOR ALIGNMENT
TO DESCENDING ARTICULATING TOP DRIVE

For Patent Purposes:

Date: Dec. 22/03

Signature: *A. L. L. L.*

Signature: *M*

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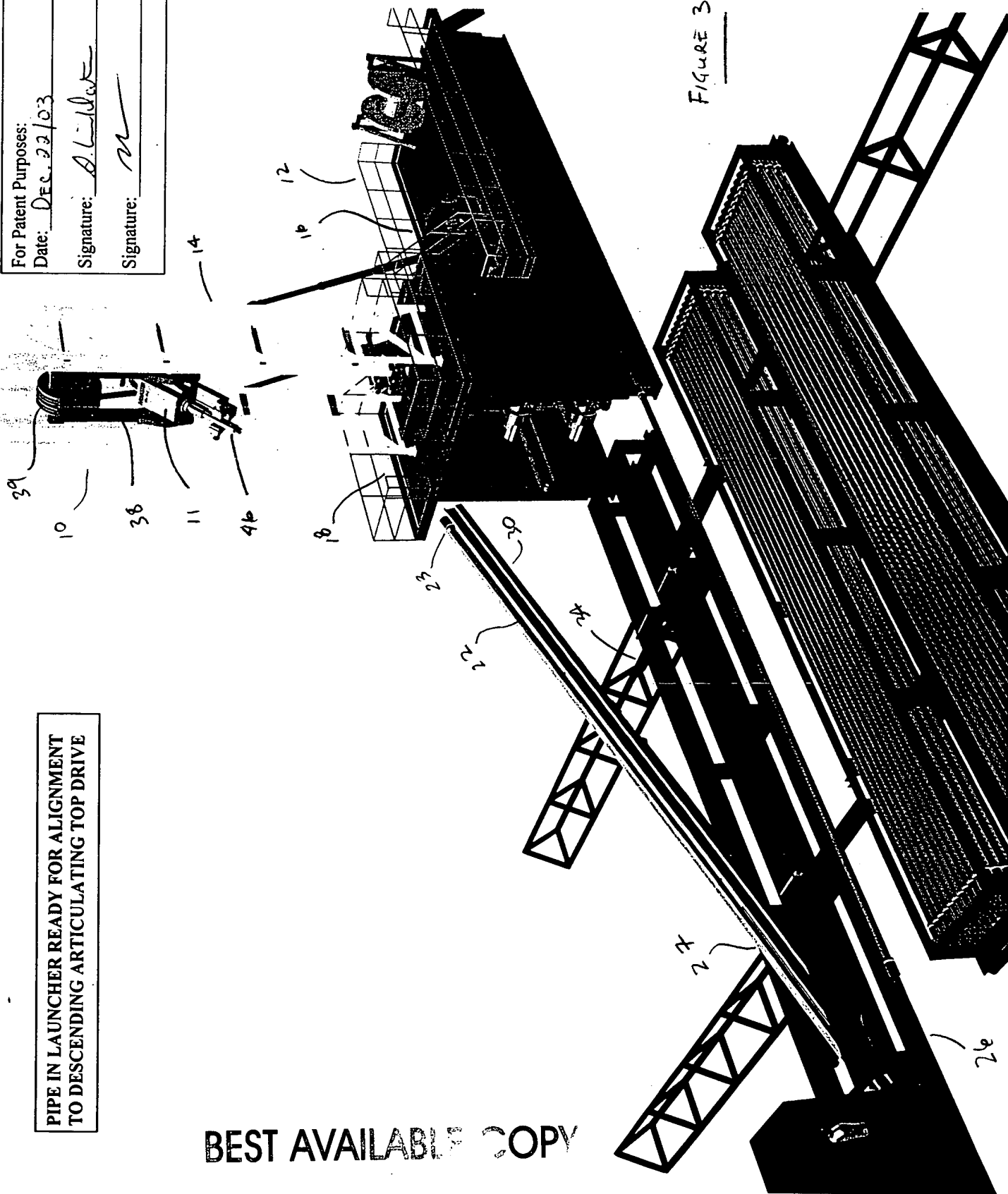


FIGURE 3

NOVEMBER 2003

For Patent Purposes:
 Date: Dec. 22/03
 Signature: A. L. White
 Signature: M

PIPE ALIGNMENT READY FOR PIPE LAUNCHER
 TO POSITION PIPE IN TARGET ZONE

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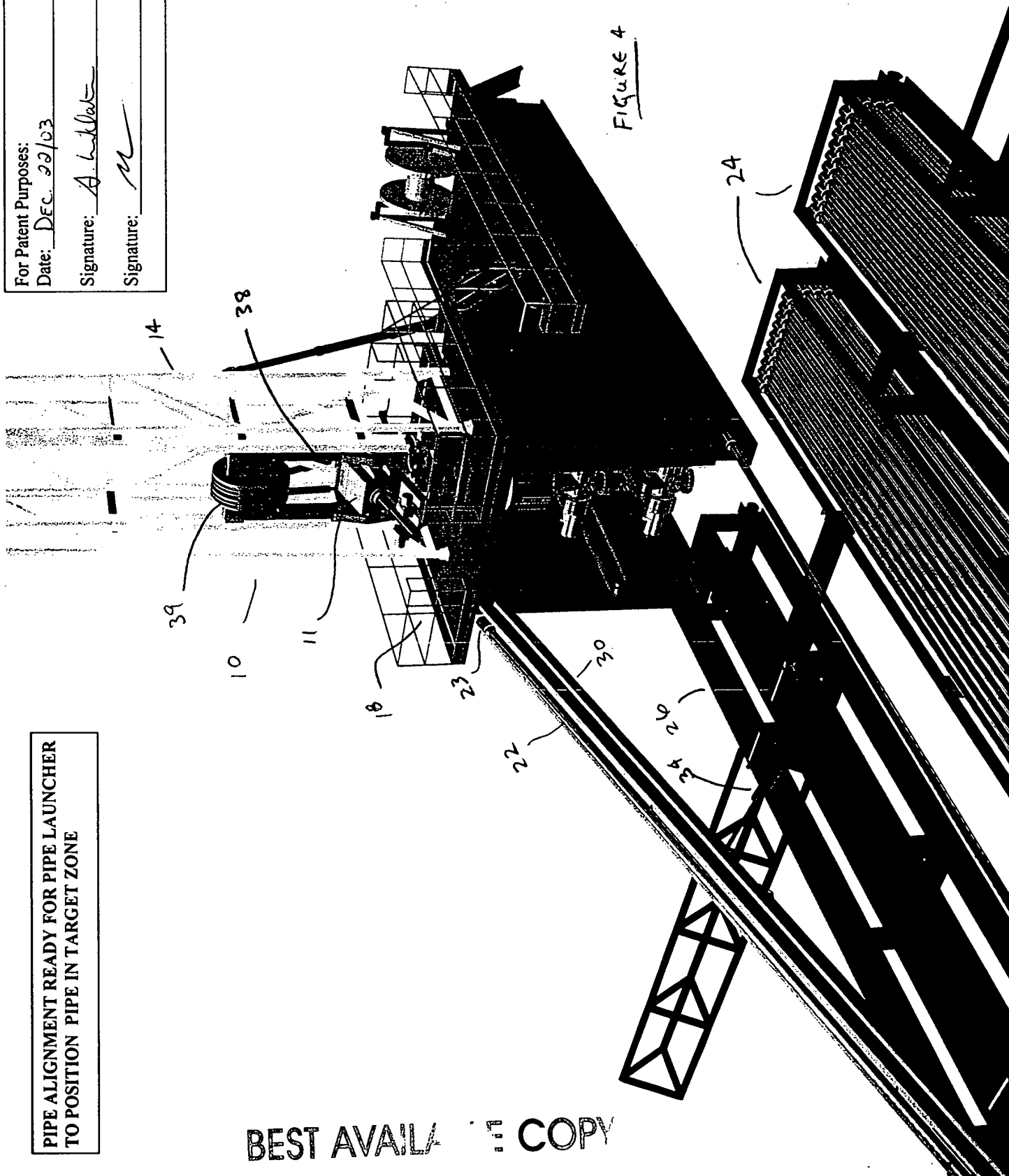
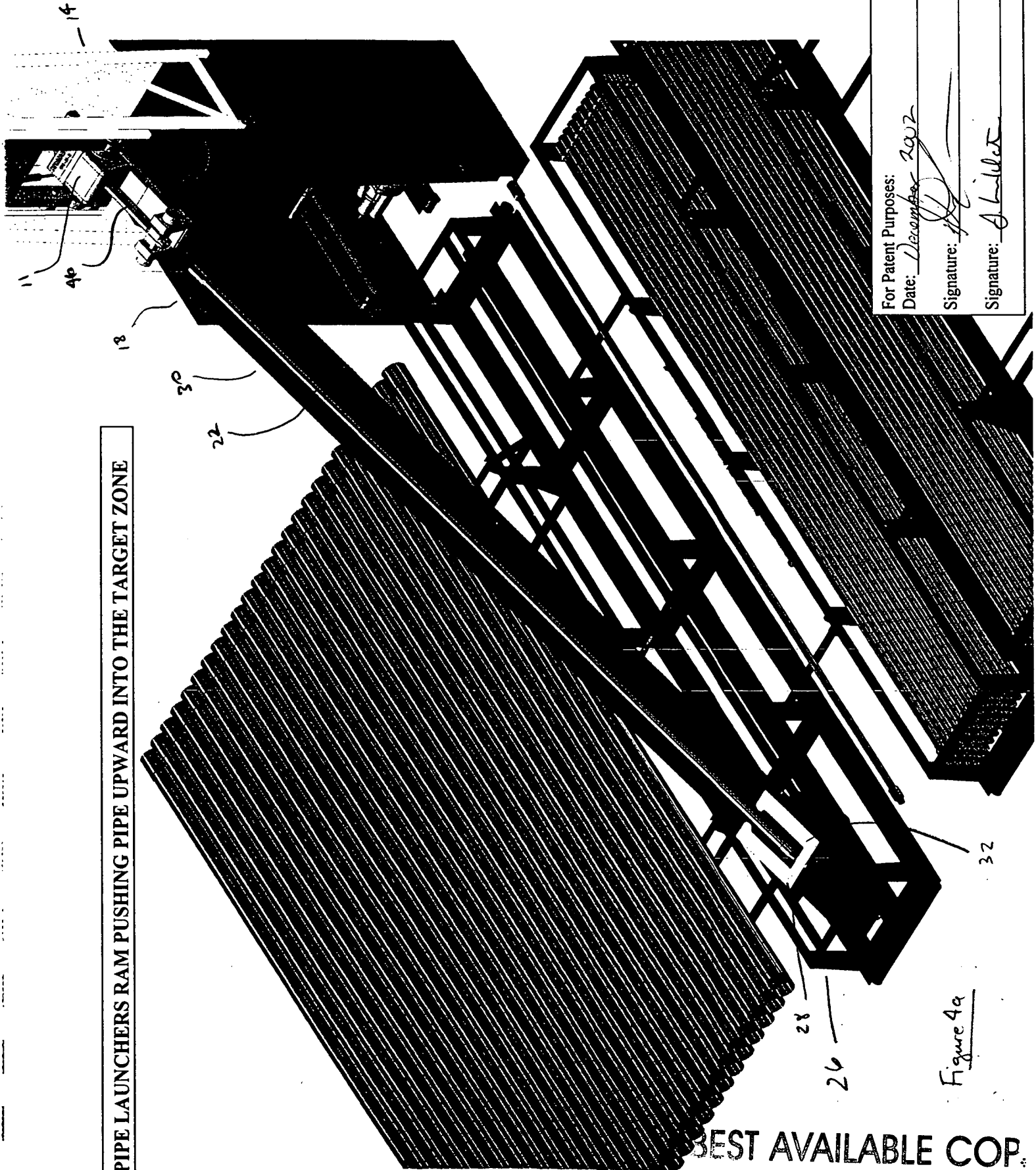


FIGURE 4

PIPE LAUNCHERS RAM PUSHING PIPE UPWARD INTO THE TARGET ZONE



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Signature: *[Signature]*


Figure 4a

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FIGURE 5

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 Signature: [Signature]

Date: December 2012



Abilities

•

GRIPPER IN ACTION, CLAMPED TO
TOOL JOINT, READY TO SLIDE UPWARD
TO MEET THE SLOWLY ROTATING TOP
DRIVE QUILL

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FIGURE 6 22

For Patent Purposes:

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Signature: *A. L. L. L.*

Signature: *M*



FIGURE 7 12

CONNECTION COMPLETED, GRIPPER
REMAINS LOCKED ON FOR HOISTING

For Patent Purposes:

Date: DEC 22/03

Signature: *Alvinder*

Signature: *M*

GOING UP, DRAGGING THE PIPE WITH
THE TOP DRIVE ARTICULATING RAMS
SET TO THE FLOAT POSITION

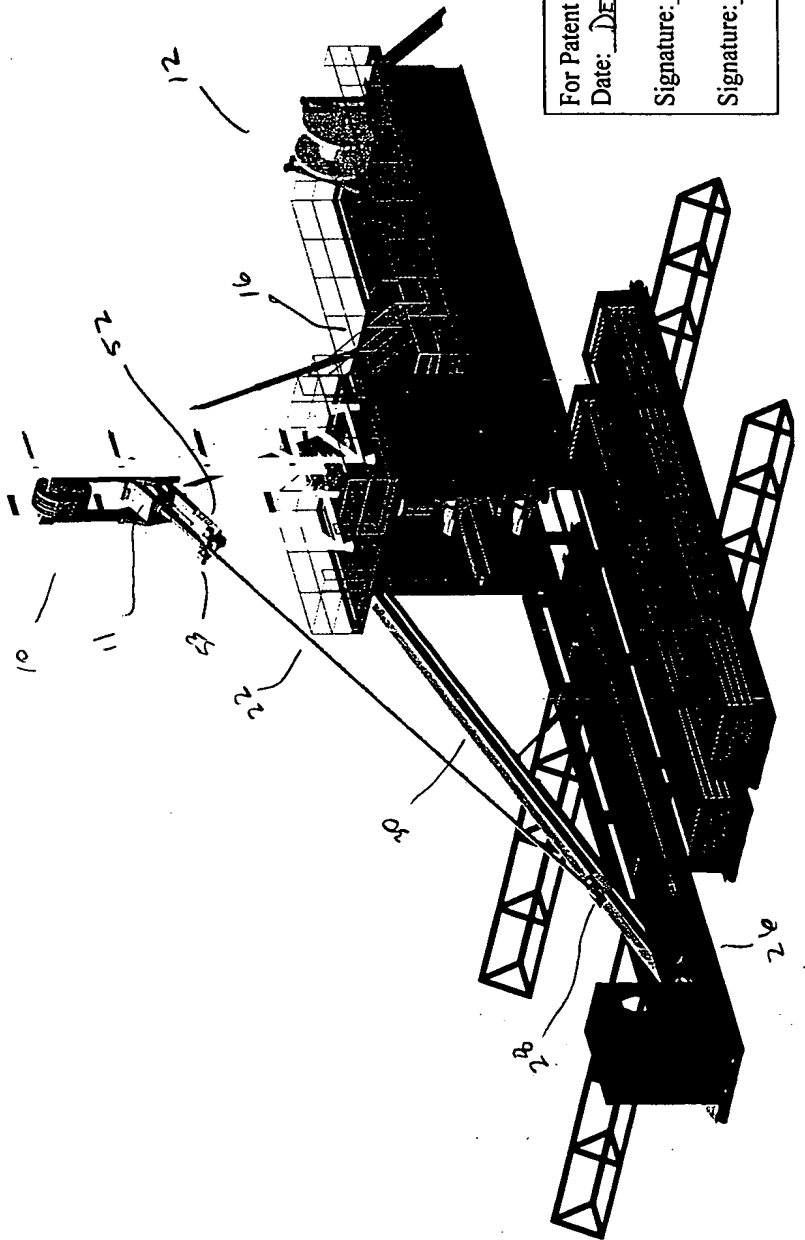
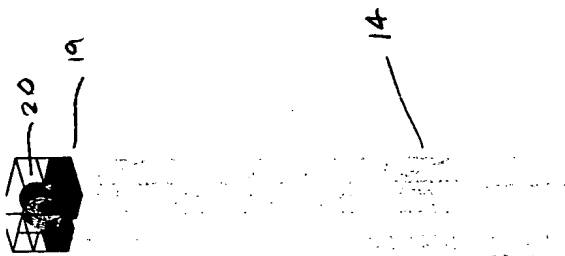


FIGURE 8

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Signature: A. L. L. L.	
Signature: M	

DRILL PIPE READY TO BREAK FREE OF THE DOLLY AND SWING GENTLY INTO THE VERTICAL POSITION

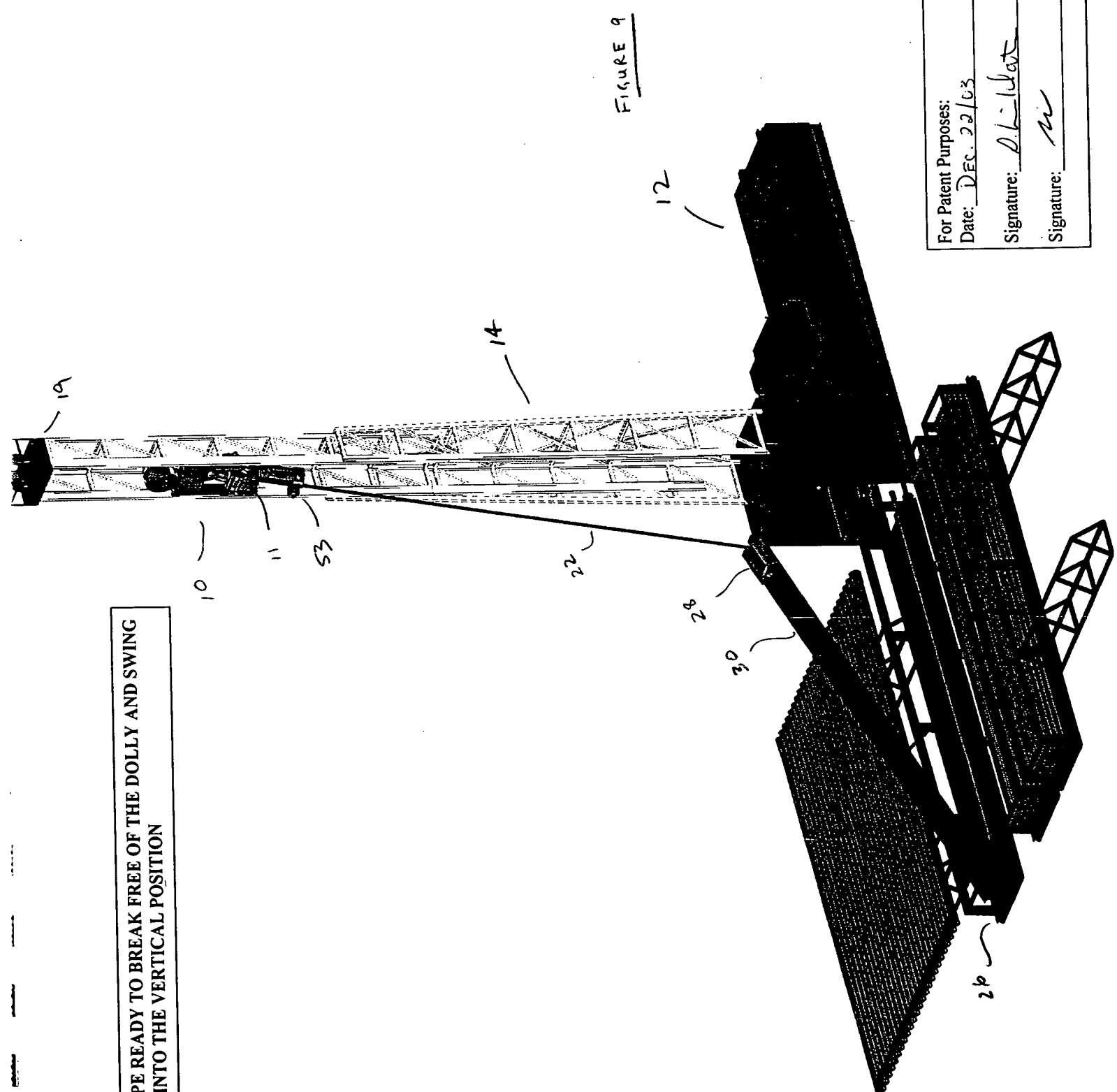



Figure 9

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Signature: D. L. Wat

Signature: 

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DRILL PIPE IN DRILLING POSITION, GRIPPER RELEASED

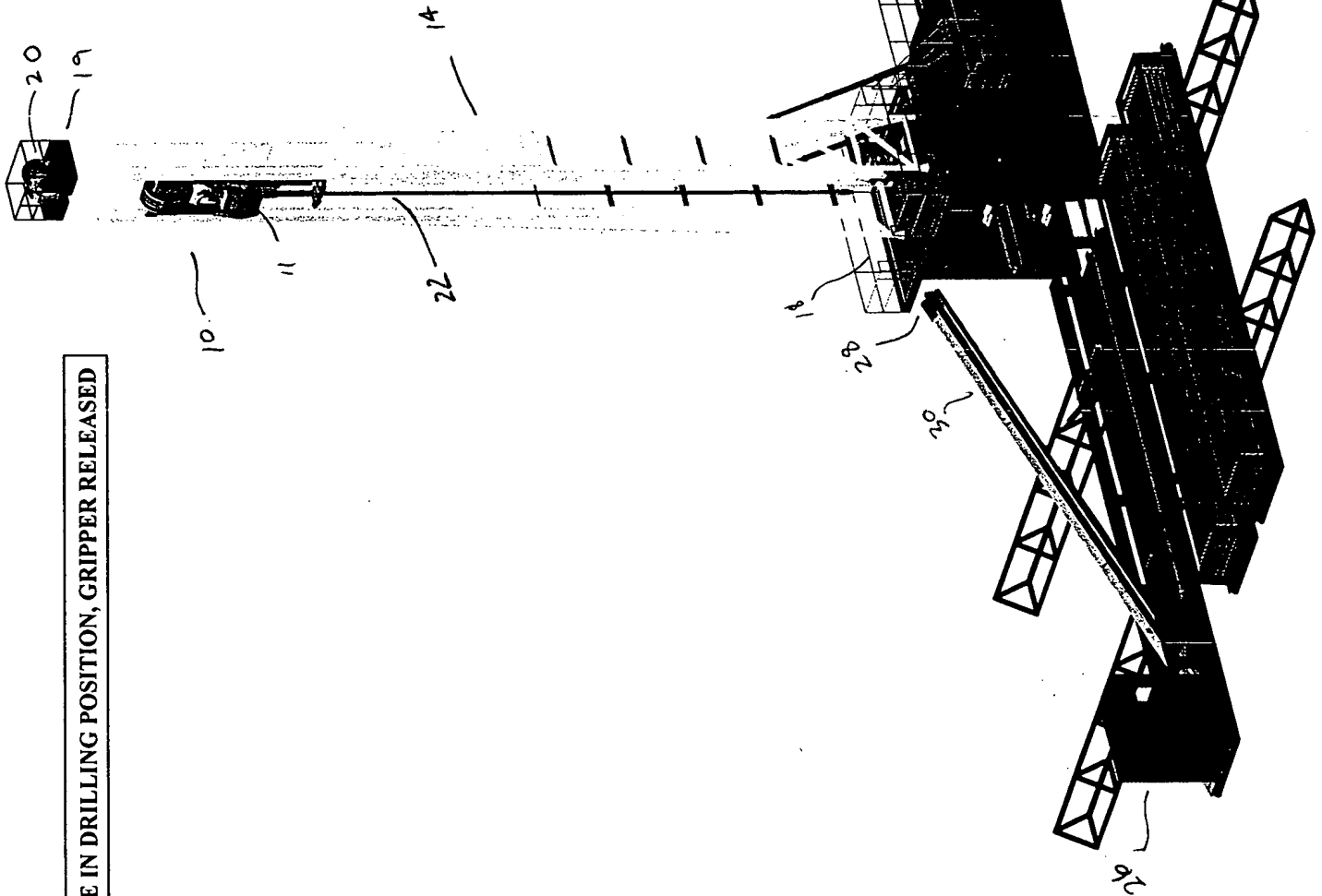


FIGURE 10

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Signature: *A. L. L. L.*

Signature: *W*

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COMING OUT OF THE HOLE TO LAY DOWN, OR
TRIP

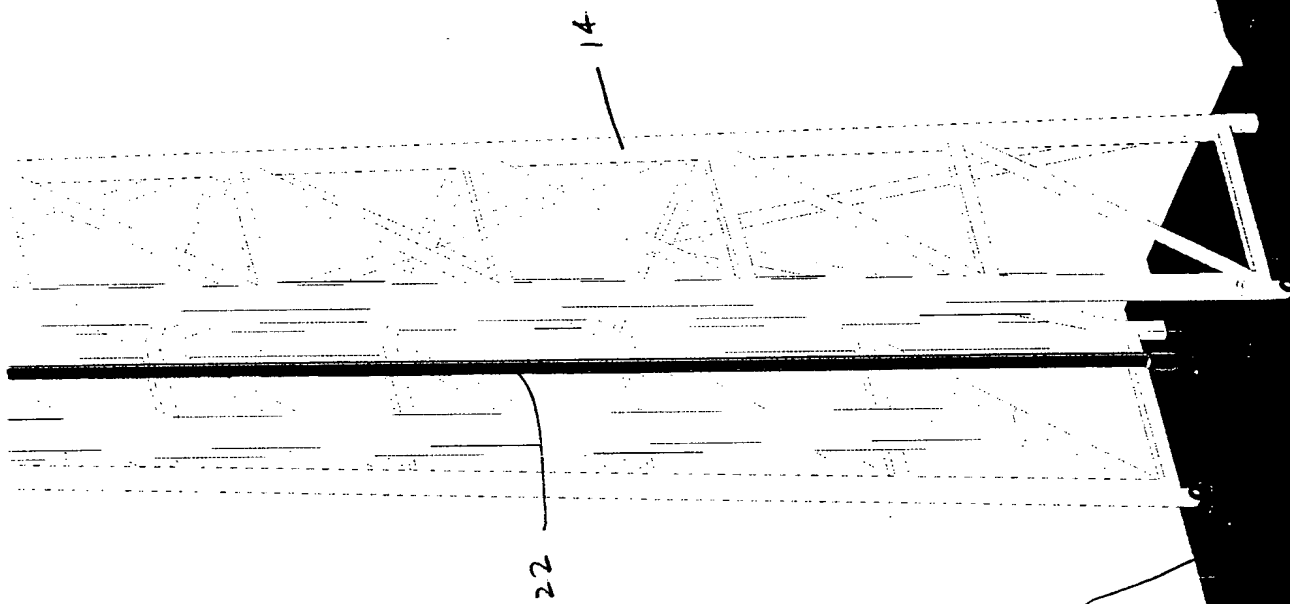
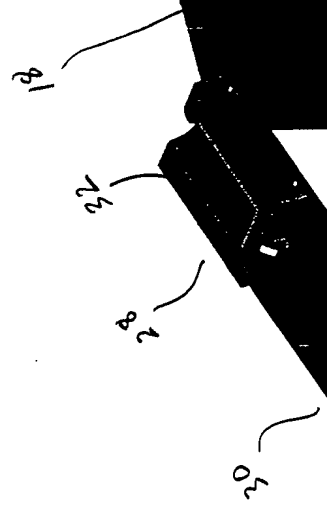


FIGURE 11



For Patent Purposes:
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Signature: [Signature]
Signature: [Signature]

TOP DRIVE ARTICULATING SLIGHTLY TO ALLOW TAGGING
OF CART IN PREPARING TO LAY PIPE DOWN



For Patent Purposes:

Date: DEC 22/03

Signature: *A. L. Water*

Signature: *n*

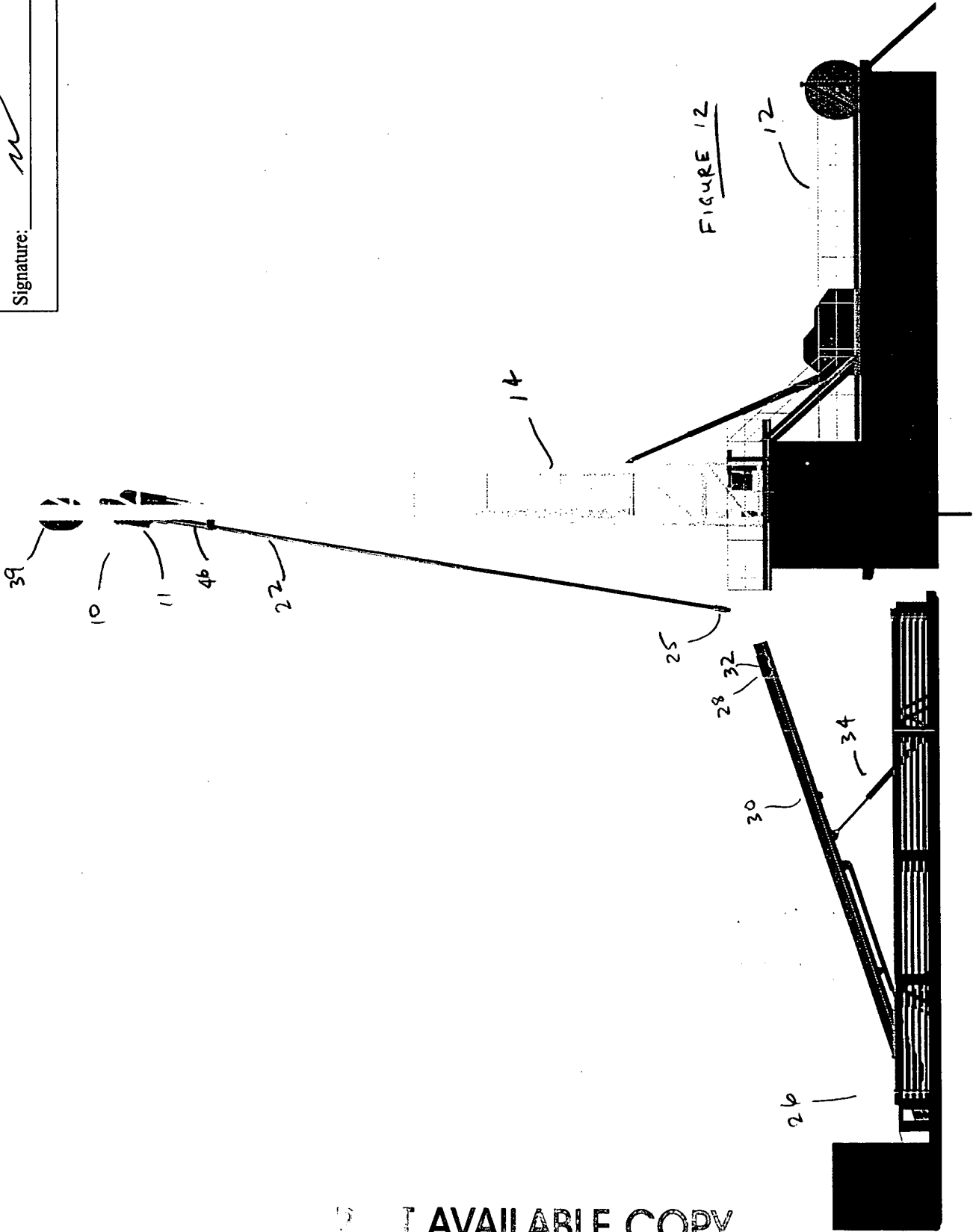
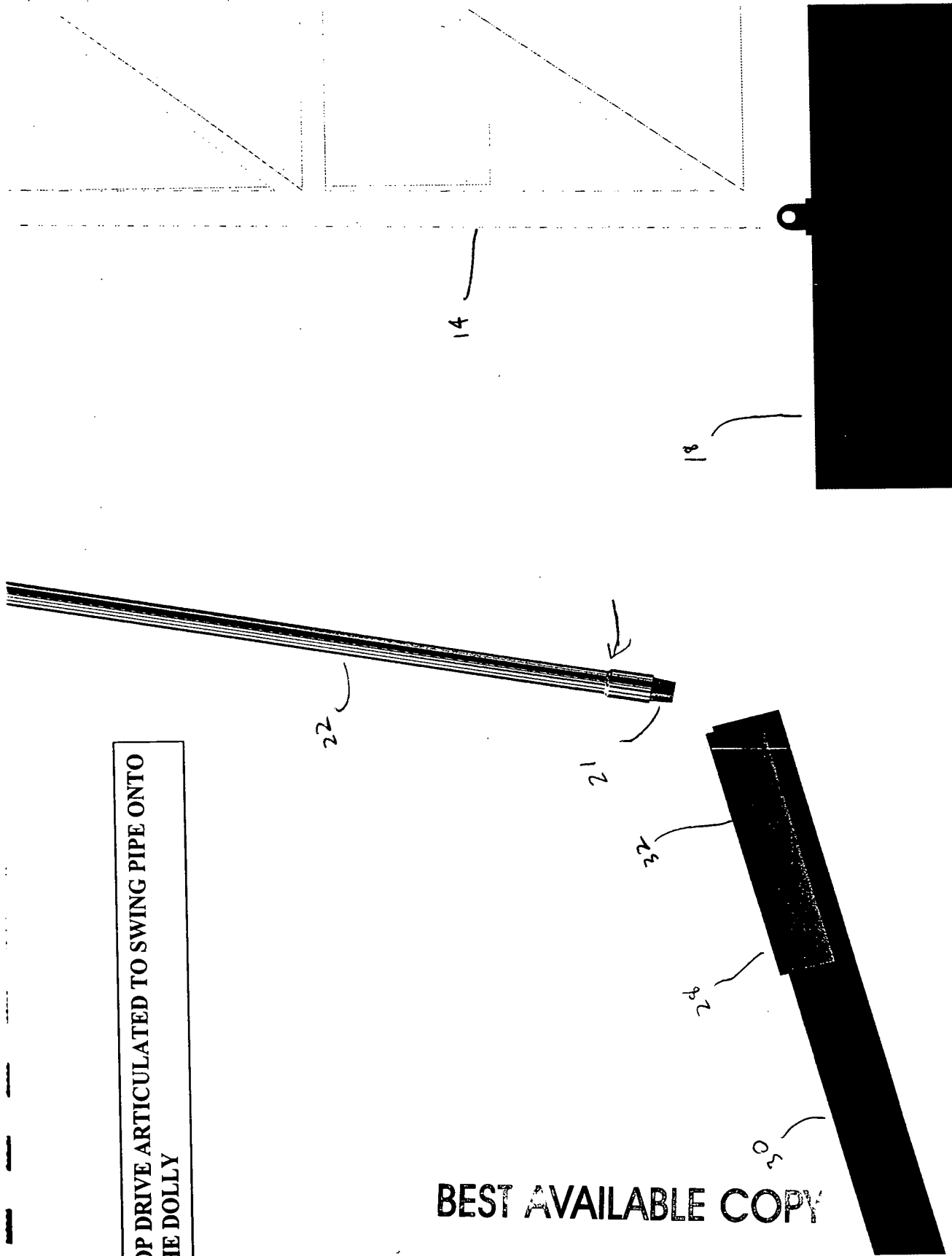


FIGURE 12

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TOP DRIVE ARTICULATED TO SWING PIPE ONTO
THE DOLLY



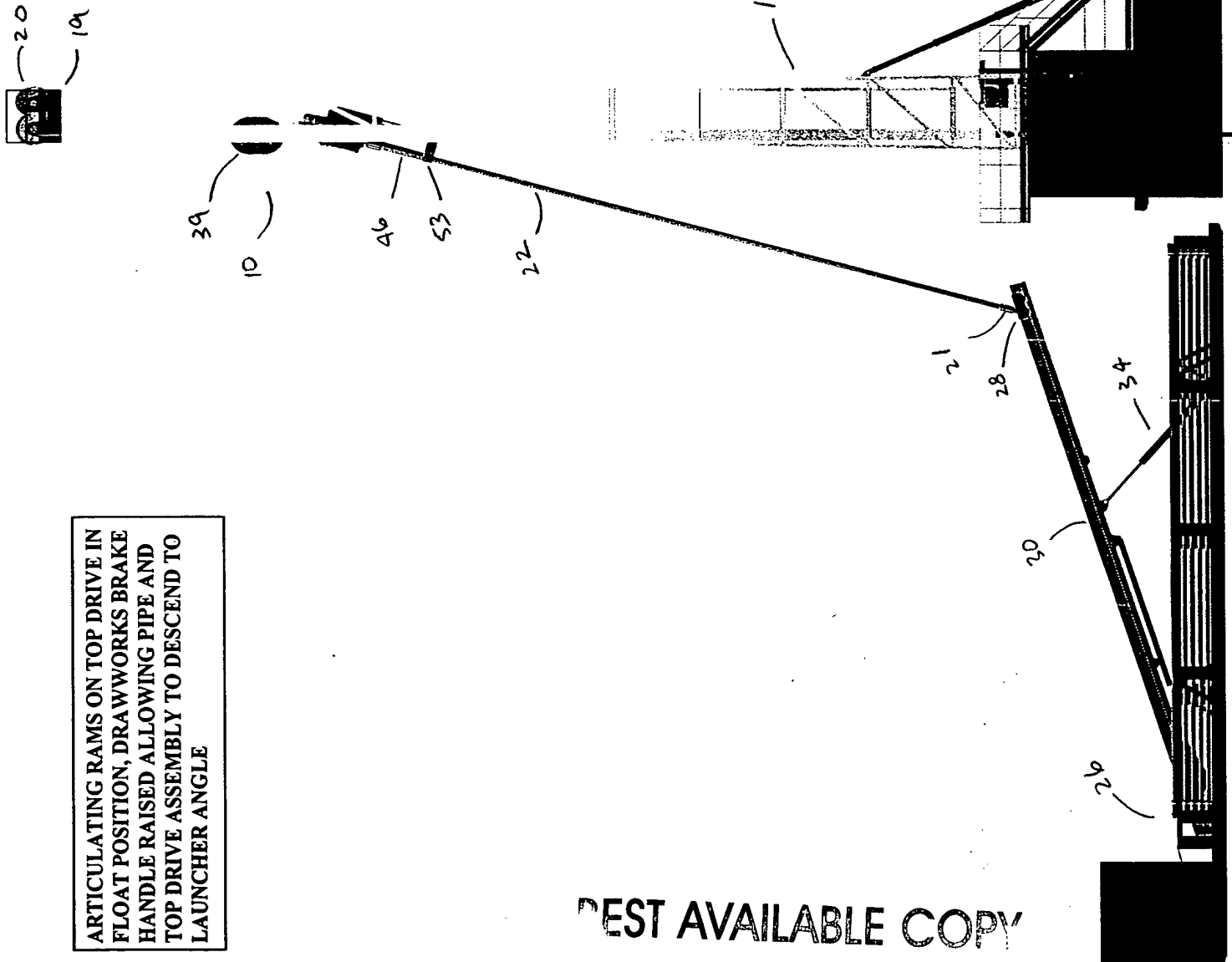
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 Signature: [Signature]
 Signature: [Signature]

FIGURE 13

ARTICULATING RAMS ON TOP DRIVE IN
 FLOAT POSITION, DRAWWORKS BRAKE
 HANDLE RAISED ALLOWING PIPE AND
 TOP DRIVE ASSEMBLY TO DESCEND TO
 LAUNCHER ANGLE

For Patent Purposes:
 Date: DEC. 22/03
 Signature: A. Wilder
 Signature: W



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BRAKE HANDLE UP TO SET PIPE IN
 DOLLY IN PREP TO LAY DOWN

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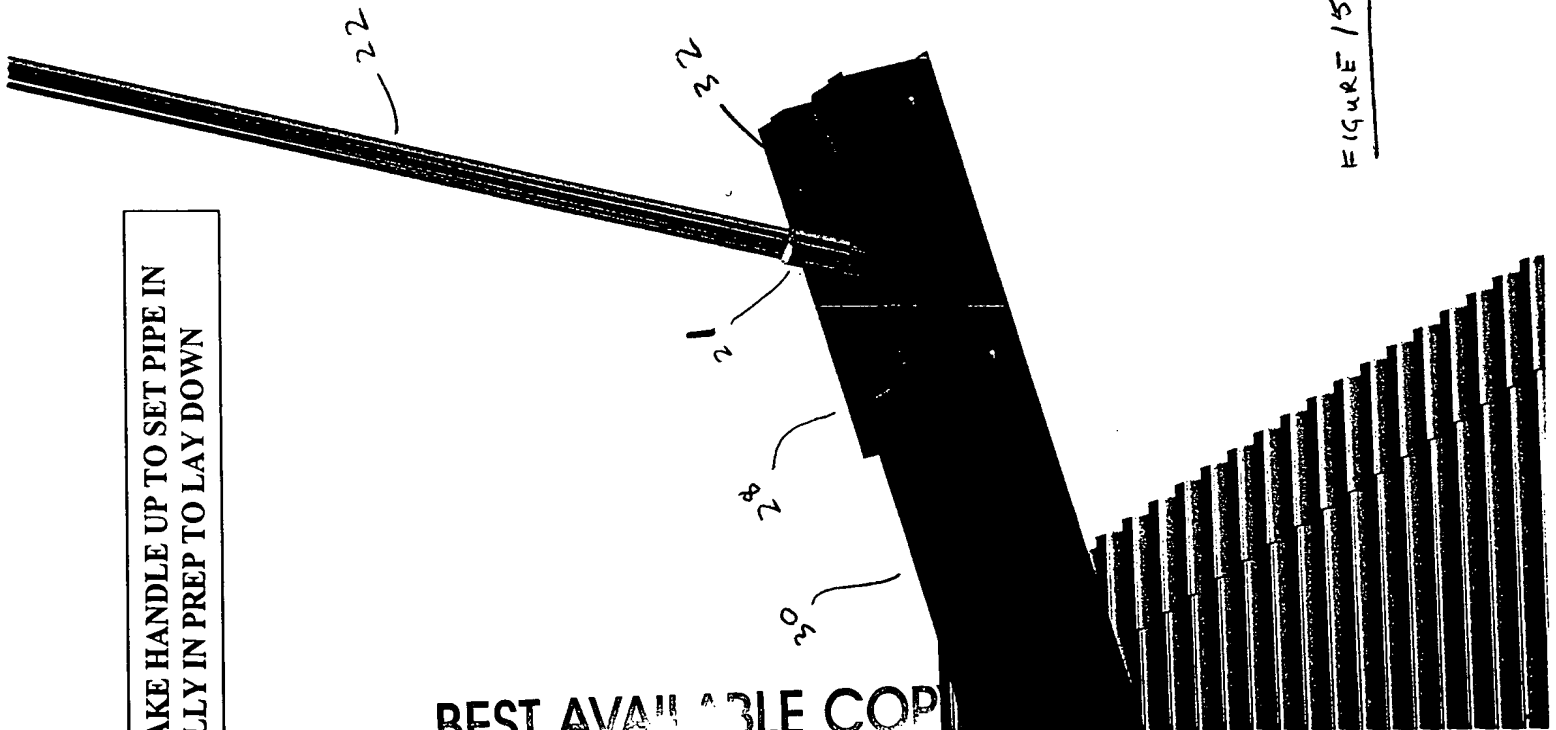


FIGURE 15

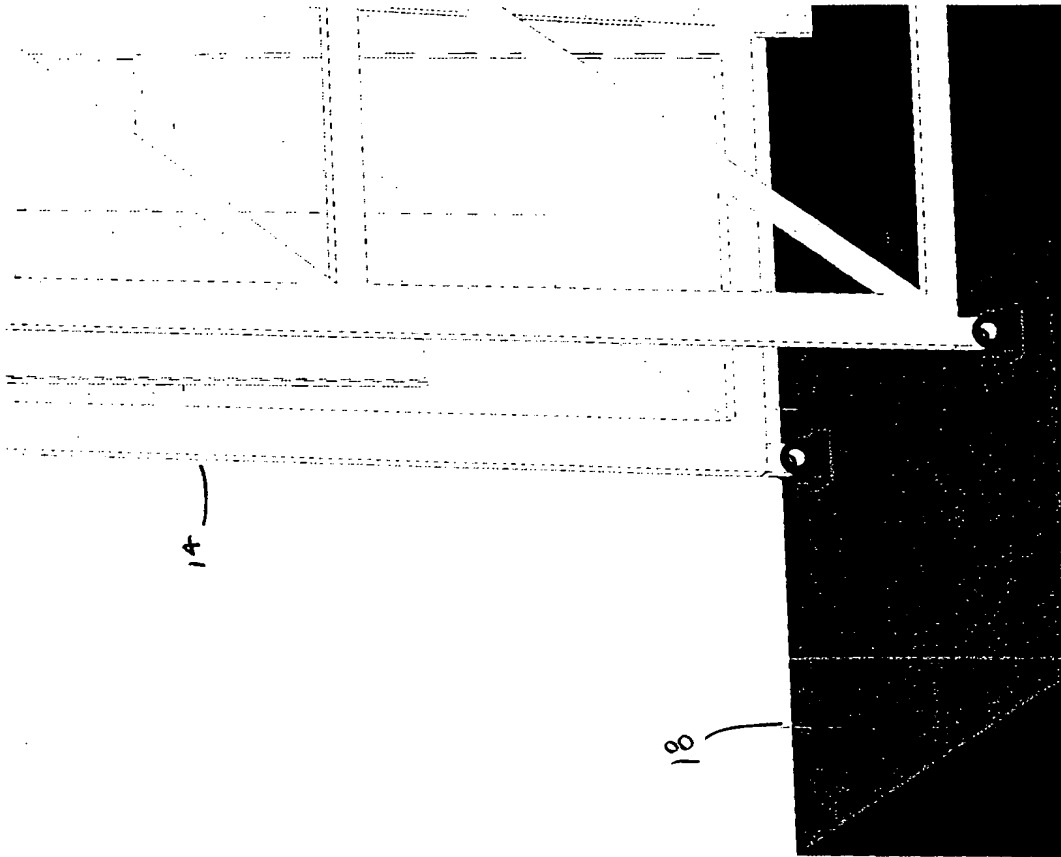


FIGURE 14

For Patent Purposes:

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Signature: [Signature]

Signature: [Signature]

PIPE DESCENDING...

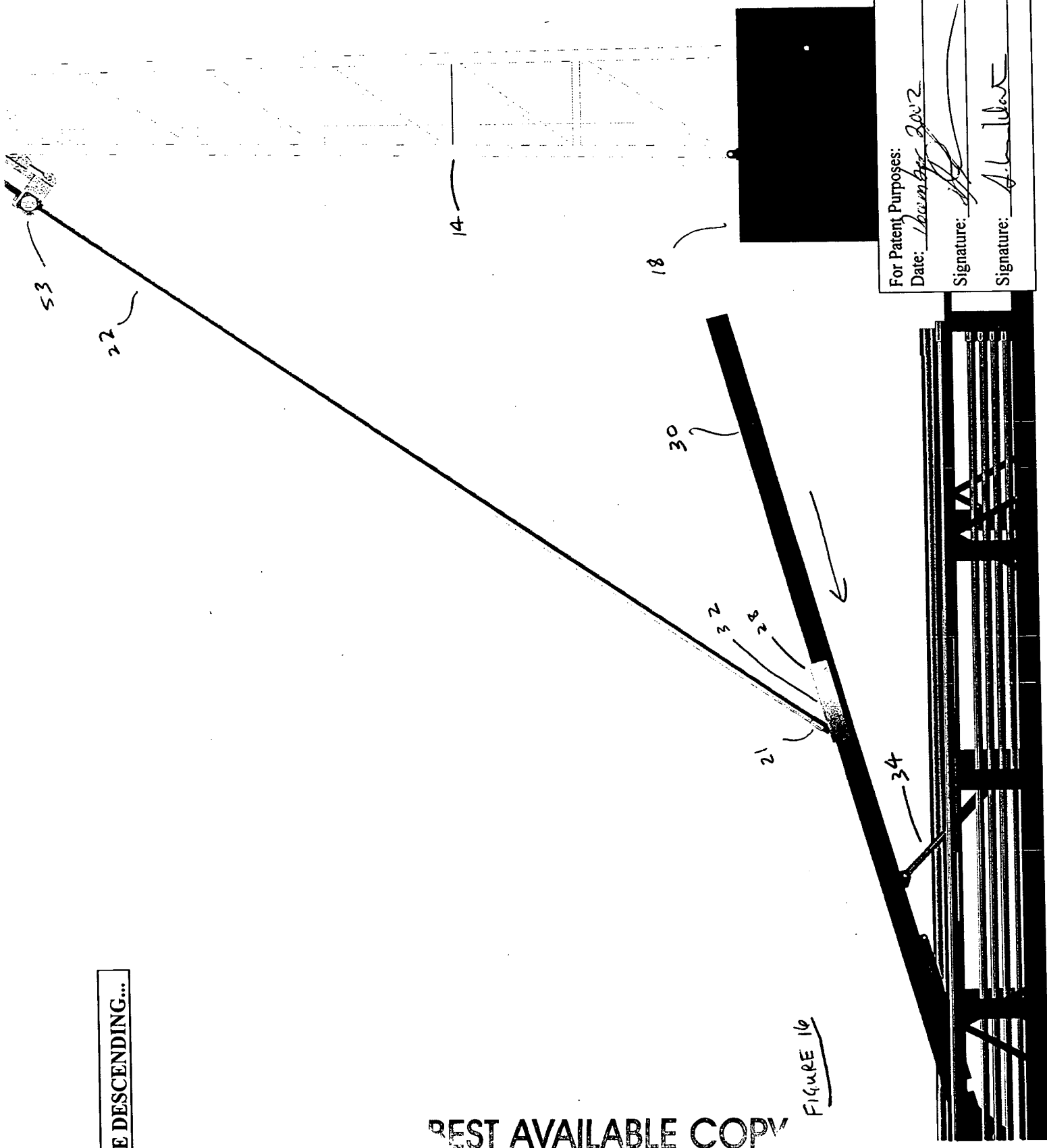


FIGURE 16

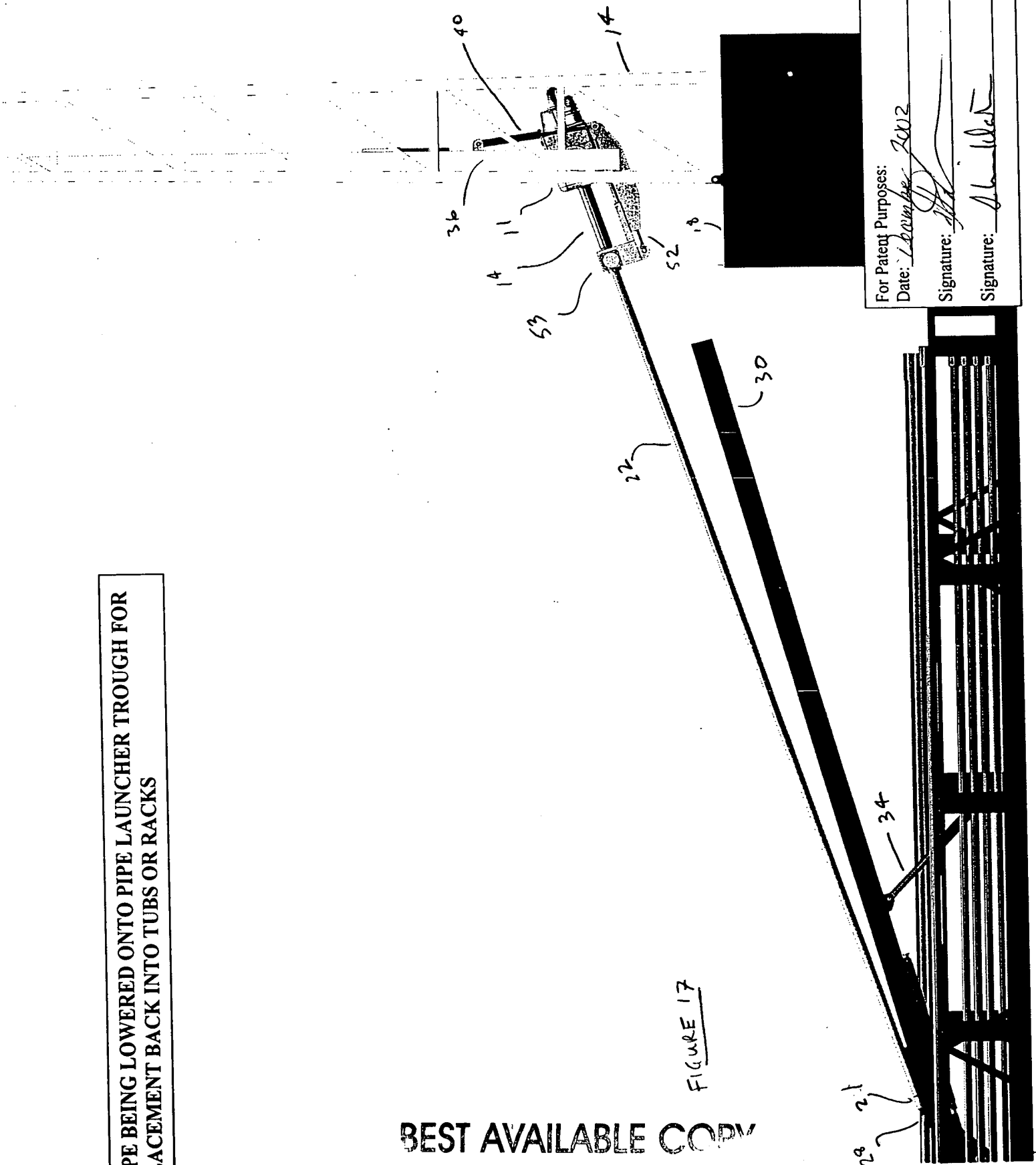
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Signature: [Signature]
Signature: [Signature]

PIPE BEING LOWERED ONTO PIPE LAUNCHER TROUGH FOR
PLACEMENT BACK INTO TUBS OR RACKS

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FIGURE 17



For Patent Purposes:

Date: *January 2012*

Signature: *[Signature]*

Signature: *[Signature]*